THE MEGACRISIS UNKNOWN TERRITORY - In Search of Conceptual and Strategic Breakthroughs

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Résumé L'univers des crises connaît des bouleversements et des mutations qui obligent à repenser fondamentalement nos cadres d'analyse comme nos logiques d'intervention. Cette contribution vise à cartographier le théâtre d'opérations qui est désormais le nôtre, à clarifier les pièges qui nous guettent ; et surtout, à esquisser des pistes d'innovation – paradigmes, logiques de réponse, formation –, puisque nous ne pourrons traverser les megacrises qui vont désormais être notre lot avec les cadrages cognitifs et opérationnels du siècle dernier.

Abstract: The nature of major crises has dramatically evolved over the past fewyears: Megcrises become the name of the game. The goal of this contribution is to capture the evolving notion of crisis, and to prepare new references to deal with the new crisis landscapes. The first section aims at building a renewed understanding of the emerging challenges we face – a combination of rogue events made of severity, speed, ignorance, hypercomplexity, inconceivability, and liquefaction-prone contexts that no longer guarantee the "back to normalcy" comforting rule. The second develops the components of a strategic response which includes: a seminal paradigm shift; a switch from management to leadership, and from "Command and Control" to decisive empowerment; and a whole new approach in education and training.

Mots clés : Mega-crises, Intelligence stratégique, Pilotage stratégique

Keywords: Mega-crises, Critical Thinking, Strategic Approach

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"We are entering a revolutionary age.
And we are doing so with ideas, leaders, and institutions
that are better suited for a world now several centuries behind us".
Joshua Cooper Ramo, *The Age of the Unthinkable*, p. 8.

"The most promising words ever written on the maps of human knowledge are
terra incognita – unknown territory."
Daniel J. Boostin, *The Discoverers* (p. xv-xvi)

Introduction

The world of crises appears to evolve fast, very fast indeed. In the late 1970s and through the 1980s, much effort was devoted to understanding the complex dynamics triggered by specific events such as a severe flood, a devastating factory explosion, the tampering of a product, a violent protest in a prison or a riot in a town, a football stadium tragedy, a train or a plane hijacking, a financial crisis in single country… The notion of *Crisis* was put forward, defined, and developed into a new scientific discipline. Soon, in the 1980s and 90s, much was done to clarify some "best practices" to deal with these events and their ripple effects. But, at the turn of the century, the basic "facts" did not fit so well with the "maps" used to read the world of crises, as we knew it. Climate change and environmental issues, vital networks of increasing importance, massive terrorist threats, huge increases in the cost of disasters due to concentration of activities, underlined that our models and mindsets had to be revisited. A quantitative jump had to be taken into account. And now, with the financial meltdown or the pandemic issue, it appears that we are not only confronted with "something more", but by "something else".

A qualitative leap is in fact the problem. Beyond mere specific events, we have to deal with fault-line convergences and global systemic dislocations. We had the intellectual framework and the operational answers; we are now left with a double blank page. We are in a new territory, adrift with no compass, but with the demand to find some new orientation, and decisional and managerial capacities. We are entering the Mega-crisis era.

What is a "Mega-Crisis"? How to deal with that kind of wild reality? We do not have the answers, but a bottom line emerges: a Mega-crisis is not just a bigger crisis. A Mega-crisis does not only call for "something more": it demands "something else". But that "something else" lies in the blind zone: unknown, unmapped, unconceivable within our present mindset, and unmanageable with our usual tools. We urgently need to think and act in a new way: other visions and expectations, other policies and scientific perspectives, other institutional and organizational designs, other "best practices" and education. But, what does all this mean? How to proceed?

The goal of this chapter is – modestly and briefly – to try to clarify that new Mega-crisis issue. Multiple layers are to be considered, to screen what is the same, and what is different. Mega-Crises retain the core basics of crises as we clarified them last century, but are indeed another world. Our responsibility is to try to capture the evolving notion of crisis, and to prepare new references to deal with the new crisis landscapes that are today's core challenge. The U.S. House of Representatives' report asked a most critical question after Hurricane Katrina: "Why do we continually seem one disaster behind?" (2006, p. 359). The imperative, when so much is at stake, is to avoid the all-seasons pitfall – "being a war behind".

1970s-1990s: Crises captured – beyond "emergencies"

Even if the concept was present in Greek culture, even if disaster studies were steadily developed in the 50s and 60s, the real advancement of crisis science dates from the 70s and the 80s. Scholars and decision-makers opened a way to the systematic understanding and managing of specific dynamics triggered by abnormal events and circumstances. Some essential dimensions were clarified – and they are still present in today's crises:

- *Crises are vital systemic threats*: crises are not just "emergencies" to be looked after by specialized technical organizations.
- *Crises go hand in hand with deep surprise*: they combine "unexpected", unscheduled, unprecedented, apparently unmanageable challenges.
- *Crises confront us with another time dynamics*: speed and rhythm have to be redefined, real time sets the tempo.
- *Crises go hand in hand with uncertainty*: you never enter a crisis with a clear expertise nor a given decision-making roadmap.
- *Crises call for decisions*: this is not a time to delay and to wait for results of studies or for consensus, but to decide, and decide fast, in the dark, within conflicts.
- *Crises confronts us with discontinuities*: suddenly, fault-lines open, facts go the extremes, statistics are of poor help, restoring pre-crisis normalcy or returning to business as usual is beside the point.
- *Crises unhinge our most basic bearings*: it is necessary to un-learn and re-learn fast and deep. Sticking to old models will be fatal.

These dimensions were captured in various definitions, such as the one offered by Uriel Rosenthal in 1986: "A serious threat to the basic structures of the fundamental values and norms of a social system, which – under time pressure and highly uncertain circumstances – necessitates making critical decisions". (Rosenthal, 1986)

But, by nature, there is a degree of contradiction between on the one hand the very essence of crisis – a cross-border dynamic and a shaking up of our systems – and, on the other hand, the Cartesian imperative to fix clear-cut definitions, typologies, maps, and managerial recommendations. Science requires definitions and models, management demands best practices, and it is normal to try to do our best to clarify and help those in charge. Nevertheless, it is essential to be extremely vigilant and avoid being trapped in the models and tools previously built for understanding and action.

Nothing in that clinical picture is to be forgotten. We still have to deal with natural disasters, technological major hazards, social disruptions, international conflicts – the typical events that triggered research into crisis modeling and handling in the 70s and the 80s. We still have to deal with deep surprise and brutal discontinuities, high uncertainty and decision in the fog of war.

Countless manuals and books were published giving best taxonomies, practices and tips to anticipate, prevent, and manage a possible crisis that a complex organization could encounter. More specifically, two "best answers" were praised, and sold to industry and government: "Tools", with crisis doctrines, organizations, plans, centers, drills… "Communication", with camera-ready preparations to help managers in charge to deal with the new dominant stakeholder – the media – and their demands in terms of information, transparency and emotion. All that is still basically necessary (Fink, 1986 ; Ten Berge, 1990; Lagadec, 1993 ; Heath, 1998).

It could be – and it really is – extremely tempting to stop there, and pretend that "There is nothing new under the sun". Nothing new: the same typology of events (if only somewhat bigger today), the same kind of challenge – facing uncertainty. And the same so reassuring managerial answers that were forged and disseminated before the turn of the century, could be certified as the operational guidelines to apply: crisis planning, crisis organization, crisis communication, crisis learning… But sticking to old paradigms and grammars would be fatal: there is the same chasm between the 70s-80s and 2009, as between 1914 and the end of World War II.

Especially in the field of crisis, questioning must prevail with regard to reassuring fixed answers. That imperative was rightly underlined in the last page of the first collective book on "Coping with Crises": "Crisis analysts should take it upon themselves to continuously challenge conventional wisdom concerning crisis management" (Rosenthal, Charles, 'T Hart, 1989, p 472).

Turn of the Century: Crises Spill over – towards systemic disruption

The same scientific network envisaged a revision of the 1989 book, but the editors rapidly measured that a simple update would not do. The first message of their 2001 study was: "What we learn about the development and management of past crises may have limited value for improving the management of tomorrow's crises. The dynamics of future crises will pose new dilemmas for crisis managers". (Rosenthal, Boin, Comfort, 2001, p. vii). New dimensions had to be taken into account to adjust to crises as they developed a decade after the first publication:

- *Inconceivability*: "The 1990s witnessed many unforeseen and sometimes inconceivable crises." (p. vii)
- *Complexity and process*: "Today's crisis is not a discrete event, but a process unfolding as manifold forces interact in unforeseen and disturbing ways. Modern crises are increasingly characterized by complexity, interdependence, and politicization. " (p. 6)
- *Embedded feature*: "Crises will become ingrained features of society." (p. 343)
- *New ways of handling, and thinking*: "The administrative repertoire of prevention and intervention strategies is unsuited for the increasingly complex and interdependent character of today's and tomorrow's crisis […] New crises require new ways of thinking." (p. 346)

It was not long before reality proved such diagnoses right. A series of "wild" shocks came out of the blue around the turn of the century. Our "house-trained" risks and crises suddenly became savage beasts once more, ignoring the statistics, rules, models, maps and scripts they were supposed to respect.

- *9/11: The incredible*. Everything was ready for a real-time reaction in case of geostrategic attack. Yet on that day, the attack came from nowhere: individuals using US airports, US planes, knives and a collective kamikaze strategy, to simultaneously attack the financial, defense and (tentatively) institutional hearts of the world's leading country. The cry of a NORAD official sums it up: "*This is not a kind of war we know! We are not ready for this!*" (in Lagadec, E. 2007).
- *Katrina, 2005: The Perfect Storm*. Hurricanes are the best-known natural disasters and have benefited from the best disaster planning, including the best surveillance organizations and practices. Certainly the Deep South was not as well prepared as Florida, and FEMA had been weakened as a result of reorganization following 9/11.

But the core challenge was somewhere else, in the very essence of the event. As Admiral Thad Allen put it: "*Katrina was not a hurricane, but nobody understood that. It was a weapon of mass destruction without criminal dimension*" (Allen, 2008).

- *Anthrax, November 2001*. Lethal poison in the US and thousands of fake white powder packages everywhere on the planet were cause of great concern. Yet the real nature of the issue was discovered when it was understood that the problem was not the poisoned letter in itself, but the essence of the postal technical system: the sorting machines were squeezing out the poison, and letters all around were contaminated and then dispatched in every direction. The discovery was staggering: "*My system is their weapon!*" (Lagadec, Rosenthal, 2003).
- *Continental Blackouts*. Canada, January 1998; East North America, 14 August 2003 (US-Canada, 2004); Italy, September 2003; Europe, 5 November 2006: large urban areas plunge into darkness; a thousand miles away, airport hubs are subject to traffic congestion. Canadian experts had it right when they defined the problem: "*We were prepared for technical mishaps, not to deal with system destruction*."
- *Foot and Mouth, UK, 2001*. The ministry of Agriculture thought they had everything to solve the 2001 outbreak, since a plan had been written after the latest epidemic in 1967. The Vets were sure of their assessment after two weeks: 15,000 head of cattle were contaminated; and the way out was known: kill and burn the suspicious animals, and shut down the countryside. But their mapping of the issue had become irrelevant, for two main factors: a dense highway system made possible a rapid transfer of thousands of cattle, overnight; European quotas made it attractive (even if illegal) to organize a large "Bed and Breakfast" lending system to help farmers to make up quotas. After two weeks, the number of cattle infected was not 15,000 – but 2 Million. Yet, the shutting down of the countryside was also killing another economic sector: the tourism industry, 20 times more active and profitable than the agricultural sector. Vets had to leave their seats to the epidemiologists; Agriculture had to abandon its role as lead ministry. "*Foot and Mouth had become something else, 2001 was no longer 1967"*. (Mike Granatt).
- *SRAS, Hong*-Kong, Toronto, 2003. Cities, as ever, appear to be an ideal place for contamination. But the density and speed of modern globalized exchanges has transformed this well-known characteristic. The illness landed in Toronto before WHO had launched a worldwide warning; all hospitals were under severe threat before the Province had understood that the problem was not confined to the first concerned. As the head of the crisis team underlined, a total rethinking was necessary: "*The first victim of the epidemics happened to be the plan itself*" (Young, 2007).
- *Heat Wave, Europe, 2003*. Within a few days, 15,000 people had died in France, 70,000 in Europe. Officials "in charge" were staggered. The disaster did not play by the normal rules – a severe blow, and the sending in of emergency people. The problem was to detect the danger of heat… in summer; to look at heat data during the night, not during the day; to look at the number of days and nights in a row, not at specific values; to look at northern regions, not so much those used to heat; to understand that when people arrived at the hospital it was already too late – the frontline was in homes and nursing homes. There was no ground zero: one or two additional unseen deaths here and there was not considered catastrophic at ground level but, on the whole, the result was incredible. And something well studied after the Chicago Heat Wave in Chicago in 1995 (700 dead, Klinenberg, 2002) was totally foreign to our emergency mental model: the key factor was the social fabric of the cities. Where solidarity and social ties were dense and active, the result was not that

> serious; wherever loneliness, isolation, or worse: conflict, were dominant, the consequences were catastrophic. It was not a technical question, but a socially embedded issue. All that was far from our intellectual and leadership maps. In France, the first real measures taken were decided the day when the heat wave stopped – too late. The French minister of Health was right when he declared to the parliamentary enquiry: "*We did not notice anything*". (Lagadec, 2004)

After such a series of "outside the box" shocks, some key factors were clarified to help understand and handle the extended world of crises. New frontiers had to be considered. New visions had to be forged accordingly.

Our previous visions and tools were rooted as follows: events limited in scale, relatively to the whole systems; probability so low that the magnitude of a potential event could be presented as "acceptable" on a technical basis; independence and isolation of scenes and functions affected; domino effects possible, but rather slow, and limited in extension. That reference map was clearly switching to another – with a number of qualitative leaps:

- *Scale and Globalization*. A Katrina-like hurricane can devastate an area as big as Great Britain; a blackout can hit a whole continent. Every place can be hit by an imported crisis that originated far away, in space and in time. The seminal notion of "Ground Zero", with the entire system coming to help, has to be revised. Ground Zero is everywhere.
- *The network factor*. Our countries are increasingly dependent on a complex web of interlinked critical infrastructures (energy, water, transportation, information systems, banking systems, public health systems). The remarkable capacities brought by those powerful networks of networks have also brought huge vulnerabilities: when any of these systems fails, the whole is on the brink of across-the-board blackout (Auerswald, Brancomb, LaPorte and Michel-Kerjan, 2006; Boin, McConnel, 2007; Boin, Lagadec, Michel-Kerjan, Overdijk, 2003).
- *Speed*. The SARS episode in 2003 showed how, in just a few hours, the virus could jump from Hong Kong to Toronto. On 14 August 2003, the northeastern part of North America plunged into darkness in a matter of 20 seconds. Today, an electronic glitch could shut down our information systems worldwide within a minute (Cukier, 2005). Minutes for the attacks, days and weeks at least for the organizations in charge.
- *Hypercomplexity*. Hurricane Katrina illustrates the leap on the complexity scale. Katrina caused persistent flooding, a series of industrial disasters, critical evacuation challenges, widespread lethal pollution, the destruction of 90% of the essential utility networks (energy, communications, water etc.), unprecedented public safety concerns, concern over the possible loss of the port area (which is essential to the continent's economy), even uncertainty as to whether portions of the city could be saved.
- *The Inconceivable*. This is potentially the most destabilizing element of all. America had expected missiles, but was hit by its own hijacked commercial planes. We thought global epidemics were a thing of the past, and, lo and behold, the specter of a pandemic has returned. What would it mean today to lose a major urban centre, a hub city?
- *Information Super Storms*. Yesterday's imperative for crisis managers was to pass on information to the media rapidly and clearly. They are now dealing with unbelievably powerful mass-media networks that have their own "situation rooms". Everyone, starting with the manager, tunes in to CNN (or other major networks), at any breaking news signal. More: the Internet swarms the global scene, myriads of sources are brought to bear on a situation. And new tools also transform the whole stage: during

7/7 in London, whoever could not instantly reach someone in London thought the non-answering person was to be among the victims (Granatt, Lagadec, 2005).

- *Ignorance*. We were well accustomed to considering and handling "uncertainty". We now often find ourselves moving to ignorance (LaPorte, 1994). The problem is no longer to identify what we "still" don't know, at the limit of our knowledge, but more modestly to try to discern what parcel of our available knowledge really is robust enough to answer the surge of questioning from all sides that modern crises elicit, and to guide us through them when all else fails. Ignorance grows with the incredible advance of technology (nanotechnology, GMO, etc.). What's more, exploding hyper-complexity, interdependence, and inconceivability feed the engine of ignorance. Too much to process, too much instability: our tools, visions, and grammars are overwhelmed. And, on top of that, a further dilemma will be embedded in many of the crises to come: the impossibility of knowing, right at the beginning, if we are really confronted with something huge… or with a non-event. Both are possible: the mad cow disease did not cause millions of victims, as warned by some; the 2003 European heat-wave caused 70 000 deaths in Europe, when so many proclaimed it was just a little heat in summer…

The new agenda of the 21st Century Mega-Crises: Global dislocations

Up to now, at least in the last decades, the world was subject to disasters, but was fundamentally robust – a specific disaster, even if extremely severe is not a global systemic failure. Crises were, in our experience and intelligence, difficult times, with serious ripple effects to be contained. But "the whole" was not itself crisis prone. Those conditions are now intrinsically mutating. Our fundamental approach to risk has been "the breach in the dike" strategy. We are discovering that the "dikes" themselves are subject to in-depth "liquefaction" or dislocation.

- *"Natural" environment*. Climate change, water scarcity and pollution, soil loss through wind and water erosion, air pollution, virus circulation, can all produce major intercontinental and worldwide imbalances – and acute problems for cities.
- *"Tightly-coupled" global systems*. In the 1980s, we began to consider the risks of "tightly coupled" systems (Perrow, 1984, 2007). What we now have is not only a coupling of critical technical systems, but a civilization based essentially on interlinkages that are generalized, dynamic, and largely invisible, even to the operators most directly concerned. The global economy demands this structural fragility. The question of vulnerability, then, becomes a structural embedded problem, linked to the very way our systems function.
- *Geostrategy, Violence*. Globalization opens innumerable fault lines between peoples who, in the past, had been somewhat isolated from each other.
- *Economy*. The 2008-2009 period has been the most challenging example of the global tendency to glide from a crisis to a meltdown – from the "subprime crisis" to the financial, and then economic-social quake.

We are discovering that any disturbance can stir multi-dimension phenomena, each fault-line (economic, for instance) connecting to another (social), and another (violence), etc. The contamination is not only "rapid": it appears "instantly systemic". The best analogy is the super-cooled liquid, which appears "normal" and can, after just a slight blow, abruptly crystallize. That kind of environment defies our basic Cartesian logic, which sustains our visions, organizational design, and even crisis philosophy.

A telling first outward sign of this new reality has been the Financial-economic meltdown. The financial sector was the jewel of our economic system, home to the brightest experts in risks and the most advanced tools, with an incredible international regulation system perfectly aware of the seriousness of potential crises – 1929's Black Thursday crash was studied by all in all business schools in the world. And yet, in the wake of the collapse of Lehman Brothers, the Senate Majority Leader, Senator Reid, came on the air to declare: "*No one knows what to do. We are in a new territory here. This is a new game. You can ask Bernanke, you can ask Paulson, they don't know what to do.*" (CNN, 18 09 2008).

The second has been the A-H1N1 flu pandemic that emerged in March-April 2009 in Mexico. First fact: the financial-economic global meltdown was not the extravagant outcome of an isolated problem. The same "model" of dislocation would prevail in case of other kinds of global failure. Second fact: medical circles are on call, but the real strategic problem is the combination of that shock wave with other global fault-lines: finance, economy, social…

The obsession must be, as ever in crisis, to avoid "fighting the last war".

What are the main characteristics of "Mega-Crises"? The following chart is a tentative starting point to try to capture the notion.

- ***Global dislocation***. The focus is no longer the "event" (and its domino effects), but the potential liquefaction of our bedrocks, disintegration of links, destruction of most basic references – which open the way to "black hole" dynamics swallowing everything and every usual mode of response.
- ***Multiple concomitant and interlinked scenes of crises***. Even if "all hazards" approaches are always recommended, our basic philosophy of disaster and crisis management is still focused, channeled. Multiple scenes and kinds of crises now confront us, at the same time, each of them feeding the others – like rogue waves that take their colossal energy from other nearby waves.
- ***Systemic blackouts***. The problem is no longer the possible domino effect from one system to another but the global common freezing of all, since interdependencies are now total. A world without borders opens the way to crises without borders.
- ***Instant crystallizing dynamics***. The time scale is just compressed to nothing. Our systems, especially social systems, are in "super-cooled" phase, exposed to abrupt possible crystallization.
- ***From accidental failure to embedded function***. We were prepared to think of the world as stable, with some "accidents" from time to time; to see crises as difficult moments to navigate before coming back to normalcy – and even as opportunities to exploit to be stronger after the crisis. Here comes a world whose very "engine" is Mega-Crisis itself – the principle of evolution. The challenge is no longer to make sure the sea remains calm, but to be prepared to sail basically stormy, wild, uncharted oceans.

A definition to capture this new state of the world could sound like:

> ***Mega-Crisis***: "The embedded engine of a chaotic world that evolves and mutates through global dynamics whose texture is made up of complex, unstable webs of constant, global, major dislocations."

Such a vista calls for reinvented landmarks and practices.

- **Intelligence: Beyond Cartesian logic**. Whatever the country, our basic philosophy is that the world is like a marvelous Swiss watch: the knowledge of each part drives to the most efficient management of the whole. We enter a world were chaos is not the rare ultimate possibility. But we do not have the grammar for anything like that and

our institutions are not at all prepared to deal with intrinsically unstable environments. It has been said that Descartes had in mind to produce two sets of "Rules". He wrote the first, specific to a "knowable" world. He didn't write for the "unknowable world". We now need to try to draft at least some new maps for that very kind of world we are now entering.

- **Psychic resilience**. Crisis is profoundly destabilizing for somebody who is only prepared to manage according to solid rules, anchored on solid ground, and selected for his/her "inside the box" excellence. Hence there can be a dramatic refusal to search for, to acknowledge, to take charge and handle extra-ordinary crises. This explains why it is so difficult to open questions without pre-given answers already at hand, why simulations mostly test the ability to apply given rules within given robust frameworks, and almost never to explore Terra Incognita; and why leaders are so frequently absent from simulation exercises. If that situation is not changed, if every void is perceived as a life-threatening issue, there is no chance of developing any real capability to grasp the emerging mega-crisis era. People will react like those biological cells that "choose" to commit "suicide", rather to resist and invent, when faced to unidentified high-level danger.
- **Policy vision: shaping the future**. The traditional focus – back to normalcy, business continuity – will be less and less meaningful. People in charge, and numerous unmapped stakeholders, will have to write new blank pages, to sketch the future – or more exactly various possible *futures* (Rosenthal, 2004). Creativity must come first, exactly at the opposite of the traditional implementation of preplanned responses. The pitfall is precisely that we are culturally and technically prepared to do exactly the opposite – respond with the known solutions.
- **Beyond "weak signals"**. Basic training is devoted to the detection of well-known signals. Advanced training is focused on "weak signals": the detection of faint signs. Yet it is only the ability to detect the very same signs, though smaller. What is needed now is the ability to detect "something else", something "outside the box", something not previously modeled. You do not even know what you are searching for. You must be trained to detect off-the-radar dynamics. Generally, those "unidentified objects" are in the blind zone. And, if they do become visible to some, it may instantly provoke a strange sort of paralysis: the unknown triggers instant and decisive denial. The challenge is to educate people to detect, to cope with, and to work with something that does not belong to a well recognized and already managed problem. 6
- **Leadership**. "At all levels of government, we must build a leadership corps populated by leaders who are prepared to exhibit innovation and take the initiative during extremely trying circumstances" (The White House, 2006, p. 72). This is an impossible challenge if leadership is still maintained in the realm of "management" – the most efficient implementation of the best tools, in a difficult but globally mapped situation. In the Mega-crisis territory, the challenge is to draw some new maps, to invent rules and tools to rise to the occasion. People and groups have to acknowledge and to face the blank page. Leaders have to break through the conventional limits, to slip across old boundaries and invent new collective responses – and they know that they will be punished if they do not followed the "normal" practices. This supposes that he/she is able to avoid the pitfalls that are always present in extreme crises: personal paralysis, bureaucratic inertia (where each organization waits till the crisis fits its codes and rules), the general loss of nerve along the entire chains of command, and all those who, suddenly confronted with the unfamiliar, will brutally glide from denial to despair.

- **Organizational design**. The point is not to have the good chain of command to process the good answers, but the best collective dynamics to inspire the best creativity, cohesion, and initiative. Boyd's OODA loop concept can be of great help in clarifying the task: Observation, Orientation, Decision, Action (Granatt, Lagadec, Young, 2009). *Observation*, to detect the "inconceivable". *Orientation*, to re-adjust the reading of very strangely and very rapidly unfolding processes. *Decision-making*, to take advantage of any unscripted opportunities. *Action*, far from the prudent "wait and see attitude". The design of organizations has to be conceived so that such a loop can be followed, in real time. Speed is of the essence.
- **Strategic intelligence: "Rapid Reflection Forces"**. Leaders must have at hand people who are familiar with engaging chaos and who are given to thinking openly in unreadable situations. The concept and practice of the *Rapid Reflection Force – RFF–* has been forged to foster and protect the ability to open questions and forge new initiatives. It has been implemented for example in EDF (Electricité de France, the premier French public utility in the energy sector, and the leading worldwide nuclear operator). Along with the more conventional crisis teams – operations, communication, logistics, and top management – such RRF teams engage in four broad lines of questioning:
    - *What is the essence of the problem?* The intelligence front involves a constant battle to frame, anticipate, detect and clarify the nature of the crisis, surprises, domino effects, escalation dynamics, and the general mutations that can be triggered. By definition, it is not possible to grasp all the essential issues at stake in a crisis that is new, unclear and chaotic.
    - *What are the major pitfalls?* When the pressure of events becomes extreme, when bearings are lost, the normal tendency is to become mired in highly counterproductive ruts. It is crucial, immediately, to think about the major stumbling blocks to avoid. And the first is a wrong framing of the issue.
    - *What is the map of actors; what networks are needed?* Extreme crises strike at the system in ways that are hard to anticipate, and that may differ depending on the people concerned. At the same time, the new issues will have to be handled with new players. New maps will be needed both for diagnosis and for action, and they will have to be adjusted or remodeled throughout the ordeal.
    - *What constructive initiatives can the RFF suggest?* The most important thing is not to pore over statistical lists or to compile all the information possible, but rather to try to discern one or a few critical initiatives that could introduce "a new ballgame", help us escape our crisis-induced mental ruts, and launch "virtuous circles".

  Experience shows that these Rapid Reflection Forces are crucial for Executive Committees, from blowing the whistle ("there is a crisis, wake up"), to re-checking the organizational response, and above all to outline some creative initiatives to transform the global dynamics (Béroux, Lagadec, Guilhou, 2007, 2008). After two years of implementation, the quintessential power of the Rapid Reflection Force innovation is coming to the fore. Fundamentally, the RRF is not just another organizational tool providing additional answers. The RRF manifests the necessity of an open-minded, questioning, creative stance, beyond the usual mere application of previous models and mindsets.
- **Empowerment**. The years 1990-2000 were dominated by the idea of "Communication". Information had to be given to the public, as a democratic

requirement. That represented an important step forward since our tradition in times of disaster was the "Command and Control" model – the concentration of decision-making in a cloistered hierarchical structure, and the restriction of information. It appeared that other approaches were now required. Bringing coherence to a great number of entities could not be achieved with an approach to governance that was restrictive, vertical, compartmentalized, and designed to minimize information. And informing the public was an imperative in a media-dominated world.

We must now go much further. The issue is not to be "a bit more transparent" than before, but rather to take on board, in theory and in practice, the requirements of collective response in a chaotic world. Today's environment now demands dynamic linkages, fluidity and speed, shared information, and collective confidence. Information becomes critical, even for operational reasons. Because public bodies are not the only one on the front line: "The 'first' responders on 9/11, as in most catastrophes, were private civilians. Because 85 percent of our nation's critical infrastructure is controlled not by government but by private sector, private-sector civilians are likely to be the first responders in any future catastrophe" (National Commission, 2003, p. 317).

The issue is not to Reassure and Command, but to Inform and Combine. This was the lesson of 9/11 (Dwyer and Flynn, 2006), the lesson of Katrina (Honoré, 2009). This was the same seminal lesson of the 1918-Pandemic: "The fear, not the disease, threatened to break the society apart" (Barry, 2006, p. 461). Abraham Lincoln, quoted by Barry as the final words of his book, clarifies the ultimate issue: "Those in authority must retain the public's trust. The way to do it is to distort nothing, to put the best face on nothing, to try to manipulate no one. Lincoln said that first, and best. Leadership must make whatever horror exists concrete. Only then will people be able to break it apart" (Barry, 2006, p. 461).

- **Training.** The goal is not to strive to foresee the unforeseeable but to train ourselves to cope with it. Not to clarify, map and plan for every single surprise, but to *train to be surprised* (LaPorte, 2007a, 2007b). Doing that is not difficult. It just calls for: a) leaders fully open to the idea that their responsibility goes beyond just sitting in a crowded room and giving some order from time to time; b) specific short seminars where top leaders are given some new landmarks, showed operational examples of new kinds of leadership, and invited to practice through unconventional brief simulations.

Conclusion

The issue is so complex that many would call for a "wait and see" attitude: wait for stronger evidence ("Are we *absolutely* sure there is anything *really* new?"), for better definitions and taxonomies ("Are we *definitively* sure to have a *perfect* understanding before anything else?"), and stick to science- and business-as-usual best practices as we know them.

Facing such unknowns is an all-seasons issue. The "Age of Discovery" experience is probably worth bearing in mind as we now enter a new age of complexity. The most challenging issues are the vastness of the unknown, and the fierce resistance of those who are so at ease with conventional knowledge: "*More than half the world was unexplored, unmapped, and misunderstood by the Europeans. Throughout the sixteenth-century, the calculations and theories of the ancient Greek and Egyptians mathematicians and astronomers served as the basis of cosmology, even as new discoveries undermined time-*

*honoured assumptions. To reach his goal, Magellan would have to master both a great Ocean Sea and a sea of ignorance." (*Bergreen, 2004, p. 73; 10*).*

The sharp difference with the Age of Discovery is that, today, we do not have the choice – stay within the well-known Mediterranean world, or decide to explore off-limits; and the exploration is not just a problem of some intrepid sailors. We all are sailing far away on rough waters, somewhere in unknown oceans swept by "high probability-high impact" rogue waves. And, beneath the storms, increasingly numerous, we are discovering that our smart yachts are fitted out for the protected bays of the America's Cup, not for the furies of Cape Horn.

The issue is so disturbing that many will certainly proclaim that they will be "no Cassandra". Ironically, those ritual words only too well demonstrate a poor knowledge of Greek mythology: Cassandra is not the lunatic character howling monstrous nonsense day after day; she is the one who speaks the truth – but whom Apollo has deprived of the capacity to be believed. And we know that the first to display their "optimism", are also the first to swing from denial to despair when reality strikes.

There is no other way than considering reality with lucidity, even – especially – if the situation is new, threatening, and demanding. It calls for intellectual courage – even if we know after Thomas Kuhn (1962) that paradigm shift is not most welcomed in science: "Normal science often suppresses fundamental novelties because they are necessarily subversive of its basic commitments."[1] (p. 5) As early as 1975, Todd LaPorte (1975) set forth the inescapable responsibility to learn to act in a complex environment: "As organized social complexity increases, we must act when we cannot foresee consequences; we must plan when we cannot know; we must organize when we cannot control. In combination, these certainties change the context of politics, planning, and organizational designs" (p. 345). The situation is just becoming more and more pressing thirty-five years after.

The urgency is to grasp the full potential of our emerging risks and crises. Optimism is in keeping with the faith in our capacity and determination to meet the challenges as they are. Some precedents can give us the strength needed to do so. For instance, the brilliant case of the building up of the U.S. Medical School in the late nineteenth century and at the beginning of the twentieth, shortly before the 1918 worldwide pandemic: "The story of the 1918 influenza virus is not simply one of havoc, death and desolation […]. It is also a story of science, of discovery, of how one thinks, and of how one changes the way one thinks […]. [It] was the first great collision between nature and modern science. […] Shortly before the Great War began, the men who wanted to transform American medicine succeeded. *They created a system that could produce people capable of thinking in a new wa**y***, capable of challenging the natural order." (Barry, 2004, p. 7)

We need that kind of mutation today as we are facing our own globalized "Perfect Storms". It behoves us – scientists, decision-makers, lay-citizens – to make the same creative

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[1] Kuhn is so right that, even in a very serious book, entirely devoted to ultimate Global Catastrophic Risks (Bostrom, Cirkovic (Ed.), 2008) – those that threaten the very survival of Mankind itself – scientists (or some at least) appear prisoners of the past. In his chapter on the "Cognitive biases potentially affecting judgment of global risks", Elizer Yudkowsky (2008), even if he acknowledges: "Substantially large numbers, such as 500 million deaths, and *especially* qualitatively different scenarios such as the extinction of the entire human species, seem to trigger a *different mode of thinking*", can decide and justify: "I thought it better that this essay should focus on mistakes well documented in the literature – the general literature of cognitive psychology, because there is not yet experimental literature specific to the psychology of existential risks." (p. 114). Another author, Edwin Dennis Kilbourne, in his chapter on "Plagues and pandemics: past, present and future", can write: "In dealing with the novel and the unforeseen […] we must be guided by the lessons of the past" (p. 303)

step, but on a larger scale and deeper depth. To see, understand, and act according to the new realities we have to deal with. We can't just wait for the teacher's handbook of risk-free definitions and taxonomies. Camus's character in his famous novel *The Plague* sets the tone: "*This is not a question of words, this is a question of time*". When issues are that vital, personal and collective commitments are of the essence. Let's take ourselves in hand to prove that we are up the risks and crises we ourselves have constructed. This is our core responsibility at this crossroads. Shying away is not an option.

References

Allen, Thad, Admiral (2008). "Hurricane Katrina: framing the issue – A weapon of mass destruction without criminal dimension", vido-taped communication to Hans De Smet, Department of Economics, Management & Leadership, Royal Military Academy, Brussels.

Auerswald, Philip, Lewis M. Brancomb, Todd M. LaPorte and Erwann Michel-Kerjan (eds) (2006). *Seeds of Disaster, Roots of Response. How Private Action Can Reduce Public Vulnerability*, Cambridge University Press.

Barry, John M. (2004). *The Great Influenza – The Epic Story of the Deadliest Plague in History*, Penguin Books, New York.

Bergreen, Laurence (2004). *Over the Edge of the World – Magellan's Terrifying Circumnavigation of the Globe*, Harper Perennial, New York.

Bernstein, Peter L. (1996). *Against the Gods, The Remarkable Story of Risk*, John Wiley & Sons, New York.

Béroux, Pierre, Xavier Guilhou, Patrick Lagadec (2008). "Rapid Reflection Forces put to the reality test", *Crisis Response*, Vol 4, Issue 2, March 2008, pp. 38-40.

Béroux, Pierre, Xavier Guilhou, Patrick Lagadec (2007). "Implementing Rapid Reflection Forces", *Crisis Response*, vol. 3, issue 2, March 2007, pp. 36-37.

Boin, R. Arjen, Allan McConnel (2007). Preparing for Critical Infrastructure Breakdowns: The Limits of Crisis Management and the Need for Resilience", *Journal of Contingencies and Crisis Management*, Volume 15, Number 1, pp. 50-59.

Boin, R. Arjen, Patrick Lagadec, Erwann Michel-Kerjan, Werner Overdijk (2003). "Critical Infrastructures under Threat : Learning from the Anthrax Scare", , *Journal of Contingencies and Crisis Management*, Volume 11 Number 3 2003, (p. 99-104).

Boostin, Daniel J. (1983). *The Discoverers*, Vintage, Random House, New York.

Bostrom, Nick and Milan M. Cirkovic, Ed. (2008). *Global Castastrophic Risks*, Oxford University Press.

Cukier, Kenneth (2005). *Critical Information Infrastructure Protection, Ensuring (And Insuring ?) Critical Information Infrastructure Protection*, A Report of the 2005 Rueschlikon Conference on Information Policy, The Rueschlikon Conferences, in Cooperation with Swiss Re Center for Global Dialogue.

Dwyer, Jim and Kevin Flynn (2006). *102 Minutes – The Untold Story of the Fight to Survive Inside the Twin Towers*, Times Books Henry Holt and Company, LLC, New York.

Fink S. (1986). *Crisis management. Planning for the Inevitable*. Amacom, American Management Association.

Granatt, Mike (2004). "Complexity Crises – Never Fight the Last War", (personal communication, video P. Lagadec).

Granatt, Mike, Patrick Lagadec, James Young (2009). "Navigating unknown storms – *Maps and Tools for Leadership*", *Crisis Response Journal*, Vol. 5, Issue 2, pages 10-11.

Heath R. (1998). Crisis Management for Managers & Executives, Financial Times-Pitman Publishing.

Honoré, Russel L. (2009). *Survival – How a Culture of Preparedness Can Save You And Your Family From Disasters*, Atria Books, New York.

Kilbourne, Edwin Dennis (2008). "Plagues and pandemics: past, present and future", in Nick Bostrom and Milan M. Cirkovic (Ed.), *Global Castastrophic Risks*, Oxford University Press, 2008, p. 287-307.

Klinenberg, Eric (2002). *Heat Wave, A Social Autopsy of Disaster in Chicago*, The University of Chicago Press, Chicago and London.

Kuhn, Thomas S. (1962). *The Structure of Scientific Revolutions*, The University of Chicago Press, Third Edition 1996.

Lagadec, Erwan (2007). *Unconventional Crises, Unconventional Responses Reforming Leadership in the Age of Catastrophic Crises and Hypercomplexity*, Center for Transatlantic Relations, The Paul Nitze School of Advanced International Studies, The Johns Hopkins University, Washington DC.

Lagadec, Patrick (1993). *Preventing Chaos in a Crisis - Strategies for Prevention, Control and Damage Limitation*, McGraw Hill Europe, 1993.

Lagadec, Patrick (2004). "Understanding the French 2003 Heat Wave Experience: Beyond the heat, a Multi-Layered Challenge". *Journal of Contingencies and Crisis Management*, Vol. 12, pp. 160-169.

Lagadec, Patrick and Uriel Rosenthal, Ed., (2003). "Anthrax and Beyond", *Journal of Contingencies and Crisis Management*, special issue, Volume 11; Number 3, 2003, (p. 99-104).

LaPorte, Todd R., Ed. (1975). Organized Social Complexity – Challenge to Politics and Policy, Princeton University Press.

LaPorte, Todd R. (2007a). "Critical Infrastructure in the Face of a Predatory Future: Preparing for Untoward Surprise", *Journal of Contingencies and Crisis Management*, Vol. 15, n°1, p. 60-64.

LaPorte, Todd R (2007b). "Anticipating Rude Surprises: Reflections on "Crisis Management" Without End," ch 2. pp. 27-46 L. Jones, ed., *Communicable Crises: Prevention, Management and Resolution in the Global Arena*. Elsivier, 2007.

National Commission on Terrorist Attacks upon the United States (2004). « *The 9/11 Commission Report* », Final Report, Authorized Edition, Norton.

Perrow, Charles (1984). *Normal Accidents*, Living with high risk technologies, Pinceton, NJ, Princeton University Press.

Perrow, C. (2007). The Next Catastrophe – Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters. Princeton University Press.

Ramo, Joshua Cooper (2009). *The Age of the Unthinkable*, Little, Brown & Company, New York.

Rosenthal, Uriel, Michael T. Charles, Paul 't Hart (Ed.) (1989). *Coping with crises. The Management of Disasters, Riots and Terrorism*, Charles C. Thomas Publisher, Springfield, Illinois.

Rosenthal, Uriel (1986). "Crisis Decision Making in the Netherlands", *Netherlands' Journal of Sociology*, 22, pp. 103-129.

Rosenthal, Uriel, R. Arjen Boin, Louise K. Comfort (Ed.) (2001). *Managing crises – Threat, Dilemmas, Opportunities*, Charles C. Thomas Publisher, Springfield, Illinois.

Rosenthal, Uriel (2004). "From the periphery to the core", personal communication, vidéo Patrick Lagadec.

Ten Berge, Dieudonnée (1990). *The First 24 Hours. A comprehensive guide to successful crisis communications*. Basil Blackwell, Oxford.

The White House (2006). *The Federal Response to Hurricane Katrina – Lessons Learned*.

U.S. – Canada Power System Outage Task Force (2004). "Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations", April 2004.

U.S. House of Representatives (2006). *A Failure of Initiative*, Final Report of the Select Bipartisan Committee to Investigate the Preparation for and sponse to Hurricane Katrina, US Government Printing Office.

Young, James (2007) "Leadership in the age of unconventional crises and chaotic environment", personal video-taped communication.

Yudkowsky, Eliezer (2008). "Cognitive biases potentially affecting judgement of global risks", in Nick Bostrom and Milan M. Cirkovic (Ed.): *Global Castastrophic Risks*, Oxford University Press, p. 91-119.